Intelligent Street Centerlines: on the road to cost/time savings

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Project Agency: Allen County Department of Planning Services Intelligent Street Centerlines: on the road to cost/time savings

Allen County – Indiana's largest with over 660 square miles – is pursuing a unique project with Digital Data Technologies, Inc. (DDTI) of Columbus, Ohio. Rather than relying on off-the-shelf products for the street centerline and address needs of its GIS, the County contracted with DDTI to collect what will be one of the largest and most accurate street centerline databases in the Midwest. The Board of County Commissioners expects the investment of time and dollars to pull off this project to pay off handsomely through greater efficiency for administrative departments and shorter response time for E-911 dispatches.

Under the terms of its contract, DDTI is providing the sophisticated software and hardware that is being used to collect over 2,768 miles of street centerlines and 145,000+ addresses for this community of 315,000. Field data collection is being pursued using state-of-the-art, GPS-based, custom-developed software and hardware. Two dual-frequency, geodetic-level, GPS base stations collect data simultaneously during the field operation along with a third receiver located in a DDTI vehicle. These base stations utilize a small control network that was established in order to minimize base line lengths during the kinematic surveys. The points that establish this network were placed at secured reference locations jointly selected by the County and DDTI. Primary control for this network comes from the NGS HARN network in Indiana.

DDTI personnel are driving every mile of public roadways in a vehicle equipped with computers using proprietary VIRDA software. A dual-frequency GPS receiver combined with distance measuring instrumentation allows field data collectors to identify, record, and locate accurately any physical entity visible from the roadway. Addresses of each residence are logged along with data on bridges, culverts, and road signs. Post processing of the field data is conducted to verify the geographic placement of each entity and address location.

Assuming that the decision to pursue the Intelligent Street Centerlines project was based entirely on E-911 needs and concerns would be wrong. Members of the County's multi-disciplinary GIS Management Committee certainly understood the importance of a quick response in times of emergency. But, they also looked past the public safety benefits to those that would accrue to their own departments. It was the immediate wealth of data and the long-term cost savings they would bring to other agencies that prompted the unanimous decision – by both the Committee and the County's Board of Commissioners – to "invest" in intelligent street centerlines.

Numerous departments of county and city governments are now preparing for the eventuality of the data to be delivered by DDTI. Under terms of the contract, the vendor expects to provide the final delivery to Allen County by Labor Day. By that time, DDTI will have developed the following major deliverables.

·   Highly accurate street centerline data base (one meter or less)

·   Data base of 145,000+ individual addresses (specifically and within ranges)

·   Location of all bridges, culverts, etc.

·   Data base verification and remediation of any incorrect addresses

·   All visual products delivered in MapInfo as DWG and DGN files

·   All data products delivered in Access and SQL SERVER

One Page Project Discussion

INTELLIGENT STREET CENTERLINES: on the road to cost/time savings

Allen County's Intelligent Street Centerlines project will provide this northeastern Indiana county with one of the largest and most accurate street centerline databases in the Midwest. Specifically, the project will provide one-meter accuracy data for:

·   over 2,768 miles of street centerlines and 145,000+ addresses covering three incorporated cities, four incorporated towns, two unincorporated communities, as well as all unincorporated portions of Indiana's largest county;

·   an essential layer of the County's quickly-developing geographic information system;

·   total compliance with Phase II Wireless Requirements mandated by the Federal Communications Commission;

- highly accurate and efficient dispatch services by the community's E-911 personnel;

- the foundation of a soon-to-be-implemented emergency vehicle routing program that will be instrumental in cutting response time by routing police, fire, and ambulances around road construction and other impediments to fast response;

- eventual dispatching of all government vehicles based on 'closest vehicle to the scene' status;

- the foundation of technically accurate pavement management systems for the nine governmental entities whose responsibility it is to maintain the community's 2,700+ miles of roadways (State, County, three incorporated cities, and four incorporated towns);

- maintaining highly accurate data on the community's thousands of annual traffic accidents;

- locating residence and business addresses online via the County's web site;

- pursuing comprehensive and strategic transportation planning activities (average daily traffic counts, accident data collection, reporting to state and federal funding agencies, et. al.) by the community's MPO;

- monitoring citation locations, injury surveillance, and crime incidents via addresses for allocation of public safety resources;

- identifying geographic trends within the community for health care monitors and providers, crime prevention initiatives, social service agencies, educational outreach programs, et. al.;

- decision making on the appropriation of tax dollars which is rooted in quantifiable data; and

- redistricting the community's voting precincts among many other constitutionally-required responsibilities.